NATURALIST NOTEBOOK

NOVEMBER 1972

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NATURALIST NOTEBOOK

NOVEMBER 1972 VOLUME VIII NO. 9

FRONT COVER:
MORNING CLOUDS OVER THE MYSTIC RIVER

Photo by Frank R. Haeni

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NOVEMBER — THE MONTH OF WEATHER

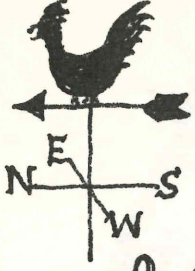
Whether it's cold
Or whether it's hot
We shall have weather —
Whether or not.

—Old rhyme

No one escapes weather. Everyone lives in it, and everyone talks about it. Any distinction between climate and weather is more or less artificial — climate is simply the buildup of all the weather from day to day in a given place, while weather is the day-by-day analysis of the climate.

General circulation of the earth's atmosphere is the cause of all our climate and all our weather. The idea that changes in weather are caused by the conflict of masses of warm and cold air underlies weather science. New England, lying in the middle latitudes, comes within the influence of constant conflicts between cold, dry air masses flowing out of the subpolar region to the northwest and the warmer, moisture-bearing tropical marine air from the south. Our typical weather is a regular succession of snow or rain storms with intervening two- or three-day periods of fair weather, with prevailing warm summer winds from the west to southwest and cold northwesterly winds in winter. The effect of Long Island Sound modifies the coastal weather, making it warmer in winter and cooler in summer than regions inland. If you drive from the shore inland in winter, you can almost see the dividing line marking the limit of the influence of the salt water: little or no snow cover on one side with completely hidden ground on the other.

With foliage fading and thoughts turning to replenishing the woodpile for chilly nights, weather assumes more prominence in our lives. Weather is nature's common denominator. This month's articles consider some of the aspects of weather in the world of nature.



WEATHER FOLKLORE

A sunshiny shower, won't last the hr.

Cobwebs on the grass, are a sign of frost.

When ladybugs swarm, expect a warm.

Moss dry — sunny sky
moss wet — rain you'll get.

When the Katydid says "Kate", he announces ten days till a frost.

When bees stay close to the hive, rain is close by.

the farther the sight
the nearer the rain.

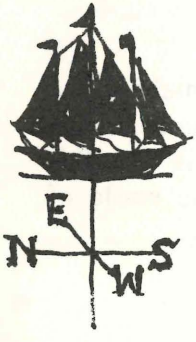
A west wind is like an honest man and goes to bed at sundown.

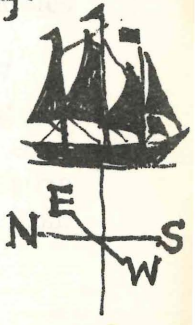
When smoke descends, good weather ends.

When the rooster crows at night he tells you that rain is in sight.

When snow begins in mid of day expect a foot of it to lay.

Mackeral skies and
mare's tails
make ships carry
low sails.





A LONG WINTER NIGHT

Text and Illustration
by Kathie Haeni

During the fall months, the black bear's feeding takes on an added urgency, for in a two- or three-month period the bear must accumulate a sufficient supply of fat to carry it through the coming period of food scarcity. By late November or early December, when a bear is ready for its winter sleep, it will have a good 3 inches of thick, warm fur with a 4-inch layer of fat underneath to sustain it and keep it warm during the coming dormant period.

This winter sleep is a strange and interesting way for these animals to get through what might otherwise be a most difficult period. Furthermore, it appears to be an eminently practical way to spend the winter. Winter sleeps and periods of hibernation make it possible for some animals to exist and even expand their range in areas where it would otherwise be impossible.

It is a common practice to speak of bears as hibernating, but a more accurate description is a "deep sleep." It is not true hibernation. The animal's temperature and heart beat remain substantially normal, and its breathing rate stays at four to five complete respirations a minute. Raccoons, skunks, and badgers have a similar period of winter sleep. During true hibernation, such as that experienced by woodchucks and ground squirrels, respiration and circulation are barely perceptible and body temperature approximates that of the surrounding air. Hibernating animals feel cold to the touch and can be handled without awakening. This is *not so* with bears.

Should a bear truly hibernate and its body temperature approach that of its environment (near or below freezing in many instances), the animal would be completely helpless. The female could not, under such circumstances, perform the functions required of her to bring forth young.

The true reason for the bear's long sleep has not yet been found. Several theories have been formulated such as hibernation due to

climatic temperatures (to escape the cold)—but this has been proven false—and hibernation in order to escape a period of food scarcity, which also has been proven weak, as bears in warm climates with a plentiful food source also sleep.

Females and cubs take to their dens on an average of about two weeks before adult males. An adult male bear never sleeps in the same den as the female. Normally, cubs of the year will spend the winter in the same den with their mother or in a separate one nearby.

Some bears may demonstrate a restlessness all winter long and never relax into a normal winter's sleep. This seems to be related to their physical condition, as a black bear's inclination to den is apparently triggered by the amount of fat it has accumulated.

When a bear begins its accelerated feeding program in the fall, it eats more than it needs to meet its daily requirements. The balance accumulates as fat. Somewhere around the beginning of winter it reaches a saturation point. It may be so round and plump that its belly practically drags on the ground. Then it loses its appetite and its stomach shrinks until the animal appears incapable of digesting any more food. When this happens, bears are ready for their winter sleep. It may be several days before they take to their dens, but during this period they have been known to refuse such normally desirable foods as candy.

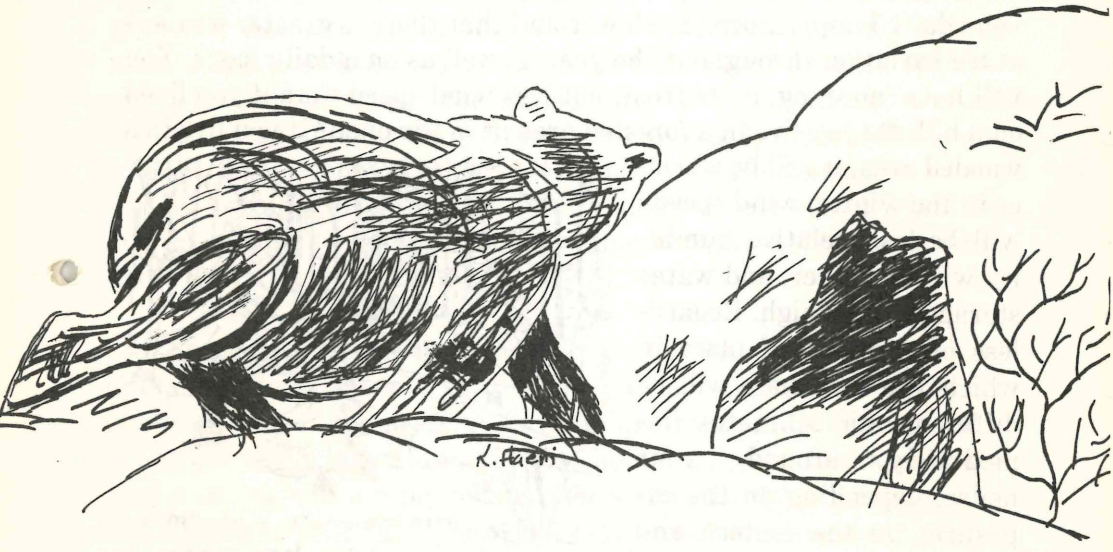
Usually, den site selection does not seem to follow any specific requirements other than that it be sheltered, hidden, and well drained. Sites include natural underground caves, semi-caves under rock ledges, broken rocks, hollows in large trees or in fallen logs, fallen tree trunks under drooping conifers, windfalls, thickets, or among small trees in a swamp. Sometimes a bear may dig a den in the level ground.

Southern exposures seem to be favored, and the location may indicate that the bear is aware of the prevailing winter winds and the need for some protection from them. Quite often the dens are so situated that snows will pile up and provide additional protection from winter's icy blast.

There is no evidence that a black bear normally feeds after embarking upon its winter sleep. In a study of black bears, an examination of the inside and outside of a den containing a female bear disclosed no excretions during a period of 98 days. This tends to indicate that during that period, the bear's digestive system didn't function.

When black bears first retire to their dens in late November or December, they do not immediately fall into a deep sleep which will carry them through most of the winter. For a week or more they exist in a half-sleep condition; but eventually, as the weather grows colder, they become dormant. Like so many things about wild animals, this is not a hard and fast rule.

One of the truly amazing things about black bears is that after spending several months asleep in a winter den, they come out looking as fat and as sleek as they did when they went in. There is, however, apparently some weight loss. This presumably holds true with females who have had cubs during the winter. The largest weight loss occurs after they emerge in the spring and before there is sufficient food around to provide energy for the bear's active period. Fortunately, most individuals greet the spring with a reserve of fat that will see them through this time.



WHAT YOU SHOULD KNOW ABOUT MICROCLIMATES — THAT EVEN YOUR WEATHERMAN WON'T TELL YOU

Text and Illustrations
by Barbara Kashanski

New Englanders are famous for their interest in the weather. Maybe it is because our weather varies so much not only from season to season but from day to day. Usually our interest is in the general over-all weather—what will the temperature be today? or, is it going to rain or snow? Few of us bother to consider some very local climatic conditions which greatly influence our lives as well as the lives of all living things that share our community. These localized conditions in the climate are called *microclimates* or, as the dictionary defines microclimate, "the climate of a specific place within an area, contrasted with the climate as a whole. Let's consider some of the conditions that make microclimates and how these microclimates directly affect our lives.

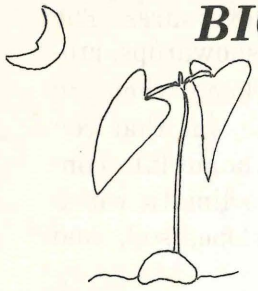
If you live in a valley rather than on a hill, you will find that your daily temperatures are lower and that there is greater temperature variation throughout the year as well as on a daily basis. You will have more fog, more frost, but less wind speed than if you lived on a hill. Do you live in a forested area or in the open? If you live in a wooded area, it will be warmer in the winter, wind speeds will be less, relative humidity will be higher, and water storage will be high. Regardless of the type of place in which you live there will be different microclimates immediately around your house, depending on the exposure. On the eastern and southern sides of buildings

frost comes later than on western and northerly exposures. The southern and eastern exposures are where the first snowdrops, crocuses, and daffodils will appear, which you probably knew when you planted the bulbs. What you probably didn't realize was that you were taking the microclimate of that side of your home into consideration. There are many factors influencing microclimatic variations —heat, light, wind movement, moisture, slope, soil, and vegetation.

The importance of microclimates on the other living things that share our community is a very large topic to be covered on these few pages. These local variations in climate, though, are extremely important to the survival of all forms of wildlife that live in a climate such as ours where winter means snow, ice, and freezing temperatures. We have already learned that in a forest it is warmer, moister, and less windy than in open areas, and because of the favorable microclimate in a wooded area many birds, animals, and insects find shelter there during the cold snowy months. Within the forest itself there are many lesser microclimates due to slope, pockets, crannies, and vegetation. Not only do the trees and shrubs act as windbarriers in a woodland, but the leaves they shed provide a protective covering for the forest floor which helps prevent the loss of heat and moisture. Add a layer of snow on top of the leaves and you have two insulating blankets. Because snow is such a good insulator, the soil may remain unfrozen all winter in pockets and gullies where there is a deep layer of snow. This factor is of prime importance to the many animals that winter in the ground. If the ground were to freeze, as it does in the open where the wind blows away the protective covering of snow, the hibernating species (insects, worms, spotted salamanders, wood frogs, and chipmunks) would die of the cold. A heavy snow blanket also stabilizes the temperature of the soil by keeping out the heat of the midday winter sun. By keeping out the heat as well as the cold, the temperature stays at a constant above-freezing temperature.

Space doesn't allow delving into all the communities that microclimates affect, but as food for thought, our freshwater wetlands, ponds, streams, and swamps have unique microclimatic variations. What are they? What animals live there, and why? Perhaps I have just given myself a topic for another article. In the meantime, why don't you and your family see how many microclimates you can discover around your house and community!

BIOLOGICAL CLOCKS



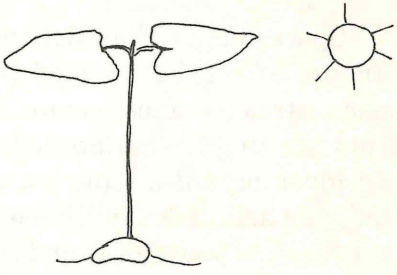
Text and Illustrations
by Brenda Golberg Bibb

Can you imagine a plant with its own clock? Or animals which have calendars? Plants and animals cannot usually show you these clocks or calendars the way the Rabbit did to Alice in Wonderland, but they do have them. You can watch a biological clock in the following way: Plant a bean seed and let it grow. Watch it as it holds its leaves up all day to get as much sunlight as possible. Then at night, watch it as its leaves get limp and droopy. If you now keep a bright light on near your bean seedling all the time, you will see that the leaves will droop at the same time of night, just as if it were dark!

If you have a pet mouse or gerbil, you may already know that his biological clock is set to wake him up in the evening and that he is most active at night. If you do the same experiment that you did with your bean plant, leaving your pet under a bright light day and night, you will see that he keeps the same pattern, running at night even though the light is on. His biological clock is set for this pattern. This type of biological clock is called a *circadian rhythm. Circa* means *around* and *dia* means *day,* so these are rhythms based on a pattern "around the day."

Plants and animals also have biological calendars. These are the patterns which plants and animals use to keep time with the changes of the seasons. By this calendar, birds know when to migrate and flowers know when to bloom.

Some plants and animals even have the tides on their biological calendars. For many marine (ocean-living) plants and animals, this tidal or moon calendar is the only way they can use to be sure of coordinating their activities for successful mating.



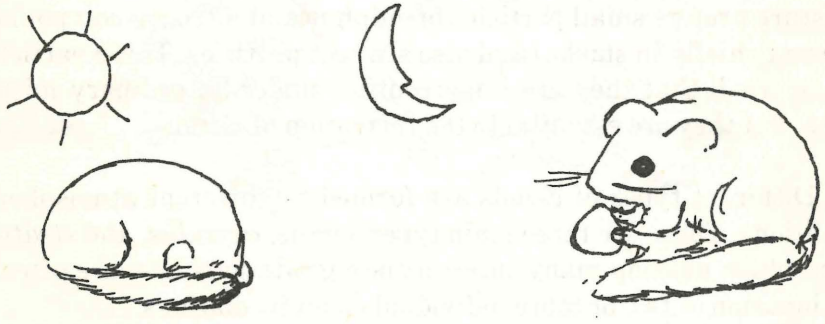
Scientists do not yet completely understand these biological clocks and calendars. They do know that even single cells can have biological clocks. Single-celled marine plants have a daily rhythm in production of light, chlorophyll, and even new cells.

But environmental factors do influence these biological clocks and calendars. Scientists believe that factors such as sunlight and moonlight "set" the clocks and keep them on time. For example, your bean plant will gradually run down its clock if you leave it in the light. However, if you put it back under a natural cycle of sunlight and dark, it will go back to being "on time."

The most important factor in setting biological calendars is called *photoperiod.* This is the changing pattern of day length with the seasons. Increasingly longer days in spring trigger the changes in the behavior of birds which include migration and breeding behavior. These changes in day length also control the flowering of many plants. One type, known as a "long day plant," blooms as soon as days reach a certain length in late spring or early summer. Scientists think that moonlight sets the biological clocks of many marine animals. Since the moon also controls the tides which are so important to marine life, the moon clock keeps them "in time with the tides."

We human animals also have biological clocks, although we may not know it. If you have ever taken a long airplane ride, you know that it is very difficult to get your biological clock set to the time in your new environment.

As you watch the weather change from season to season, try to puzzle out the factors which will be important in setting the biological clocks and calendars.



CLOUDS: MARE'S TAILS, IVORY TOWERS, AND TATTLETALE GRAY SHEETS

Text and Illustration
by Kathie Haeni

Wet weather seldom hurts the most unwise;
So plain the signs,
such prophets are the skies.
— Vergil

Although he may not have known it at the time, Vergil couldn't have chosen a better omen than the clouds to announce the future of the weather. For the clouds reflect every change aloft in pressure, temperature, and humidity. With their various sizes, shapes, colors, directions of movement, elevations, rate of growth or dissipation, amounts, speed, and time of appearance, the clouds are the bulletin boards of the atmosphere.

To make one of these clouds is not difficult. All you have to do is close the door of your bathroom and turn on the hot water in the shower. If the air in the bathroom is chilly, the warm, moist air in the shower will mix with it, cool to its saturation point, and condense its moisture into a fog-like cloud.

The atmosphere likewise generates clouds by the bathroom method of cooling moist air until it is saturated and then condenses. This recipe for making clouds still lacks an essential ingredient. Before moisture in saturated air can condense, it must have something to condense on. Bathroom mirrors are excellent, but they're too expensive an item for the whole atmosphere. Instead, the moisture prefers small particles of sulphur and nitrogen compounds (present chiefly in smoke) and also sea-salt particles. These particles are so small that they are imperceptible under an ordinary microscope. Yet they are essential to the formation of clouds.

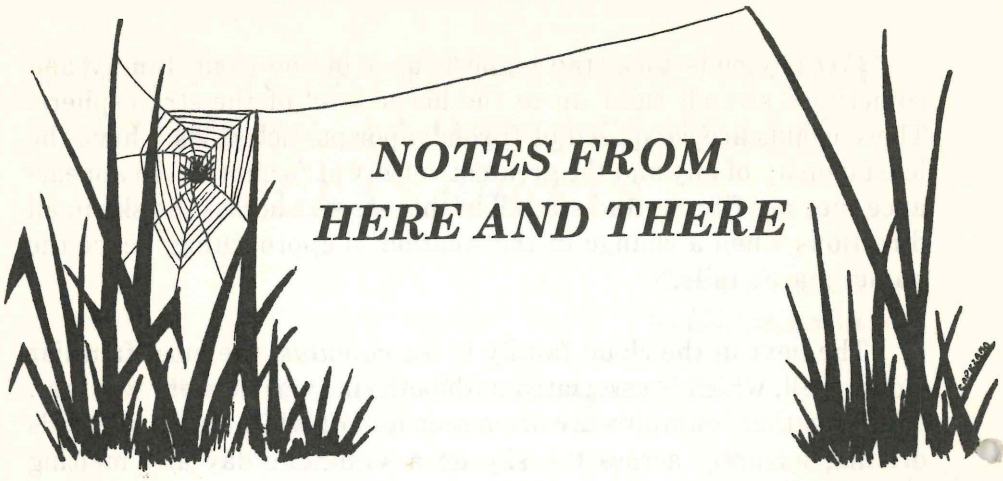
Different types of clouds are formed by different atmospheric conditions. There are three main types: *cirrus*, *cumulus*, and *stratus*, from which develop many intermediate gradations that are often a combination of two or more individual cloud formations.

Cirrus clouds form the highest layer of the cloud family and sometimes stretch right up to the lower level of the stratosphere. These clouds are composed of frozen vapor particles. They have the least density of any and the greatest variety of formation. In appearance they are fibrous and stretch in thin streaks across the sky in all directions when a change in the weather is approaching, hence the name "mare's tails."

The next in the cloud family is the *cumulus,* the most familiar cloud of all, which is associated with both fine and showery weather. "Fair-weather" cumulus are often seen as soft white banks of clouds drifting leisurely across the sky on a summer's day and melting away at sunset. The "shower" cumulus, however, rise like gigantic puffs of smoke from a long baseline and sometimes may reach up to 1½ miles high. These clouds are inclined to increase in density towards sunset till they gradually cover the greater part of the sky.

The third branch of the cloud family is the *stratus,* which is the lowest of all clouds and will sometimes descend to within a hundred feet of ground level. When these clouds form at the top of a hill, they are usually a forerunner of rain. These clouds are formed when a layer of air is cooled below the saturation point without vertical movement. These are in sheets and fog-like layers.

Clouds do not belong to any one season, so bundle up and pick a nice spot to view mare's tails, ivory towers, and those tattletale sheets of gray.



NOTES FROM HERE AND THERE

FRIEND OF THE CENTER: Mrs. William B. White has renewed her Friend membership.

THE SCIENCE CENTER LIBRARY continues to expand with the addition of a twelve-volume set of *Audubon Encyclopedia* presented by Mrs. Anna S. Bauguss in memory of the late Reverend Clarence C. Wagner.

AUTHOR ODOM FANNING is seeking material for a book, *Man and His Environment: Citizen Action,* to be published by Harper & Row. He would like to receive "examples of effective community action to achieve specific environmental objectives." If you have anything to contribute, write to him at 9206 Bulls Run Parkway, Bethesda, Maryland 20034.

RETURNABLES, which are having hard times in the United States, are big with German brewers—in fact, they're preferred. The reason, according to Dusseldorf's Glass Information Institute, is that deposit bottles travel up to 25 times between brewer and drinker before they have to be replaced. The Institute says that high utility rate is bringing about a return to returnables in Germany.

THE RECYCLING OF PLASTICS has begun in Weston, Connecticut. Collected plastics are taken to Orthotech of Framingham and converted into barbells.

REP. WAYNE ASPINALL (Democrat of Colorado), foe of much environmental legislation and a friend of strip miners everywhere, will not be returning to Washington. Aspinall was beaten in the September Colorado primary by Alan Merson, who ran as a conservationist. Aspinall had frequently ridiculed the "ecology binge."

A BILL CREATING A CONSUMER PROTECTION AGENCY is due for Senate action—and a lot of industry opposition. Business opponents of the bill hope to kill it by shuttling it to several Senate committees which say they want to study it. With the session nearing its end, that delay could kill the agency. Write your Senator now: Senate Office Building, Washington, D.C. 20510.

IF YOU LOVE YOUR CHILDREN. . ., a book on ecological living, is available from the Southington Earth Action Group, 270 West Main Street, Southington, Connecticut 06489, for the price of 75 cents.

KANSAS ENVIRONMENTALISTS are seeking the preserve Tallgrass Prairie as a national park. Two bills currently before Congress (S. 2149 and H.R. 9621) would establish that park, but no action is being taken on either measure.

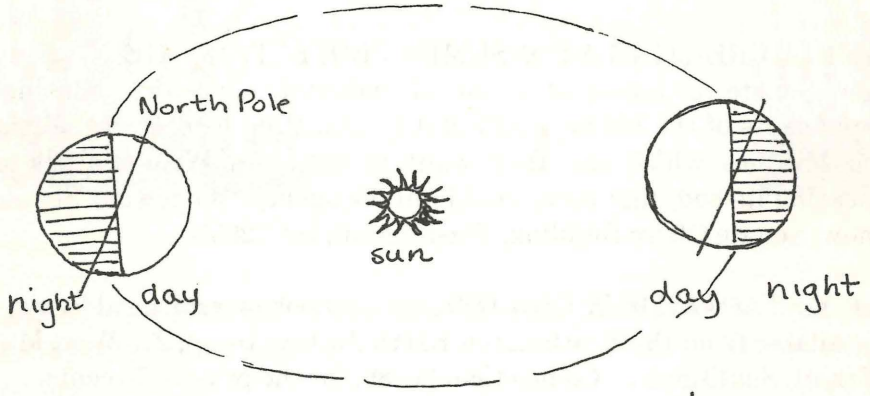
IF THE PAPER INDUSTRY recycled 50 per cent of its product, the result would be an annual saving of 500 million trees, according to the Waste Trade Journal. These trees would make a forest roughly equal to the area covered by all of New England, New York, New Jersey, Pennsylvania, and Maryland.

A NEW ENVIRONMENTAL FOUNDATION with the motto "Earth, I care" has been created by Astronauts Walt Cunningham and Rusty Schweickart. Joining them in this effort is Johnny Hart, cartoonist of "B.C." and "Wizard of Id." The main thrust thus far has been the promotion of clubs where young folk can learn about and take action on environmental matters. For more information, write to Earth Awareness Foundation, 350 Grove Street, Somerville, New Jersey 08876.

AN INVENTORY OF LITTER PREVENTION and other United States environmental programs is available for $1.00 from Keep America Beautiful, Inc., 99 Park Avenue, New York, New York 10016.

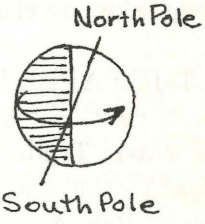
THE SEASONS

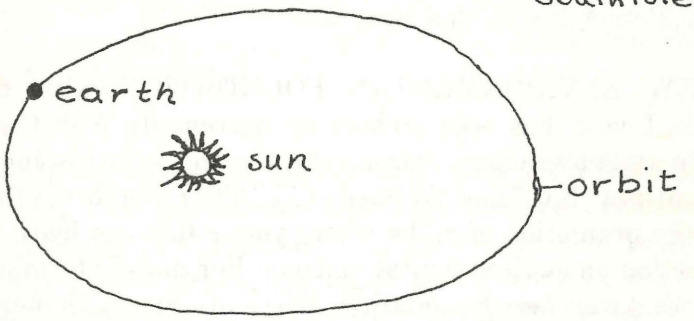
The earth is a satellite of the sun.
Its orbit is a stretched-out circle
called an ellipse.



The earth spins like a top on its axis
as it whirls around the sun.

In summer, the North Pole points
toward the sun. We get more heat
and light in summer. In the "Land
of the Midnight Sun," north of the
Arctic Circle, the sun shines all
day and night.





In winter, the North Pole points away from the
sun, getting no sun at all on the shortest
day in December.

When it is winter here and the days are short,
it is summer in Australia!

FIELD NOTES— SEPTEMBER 4-OCTOBER 4, 1972

With the exception of a cold front that moved in from the northwest September 30, birding during this period continued to be slow. Cooler weather approaching should bring more birds passing through southeastern Connecticut.

New London, Waterford, Norwich: Two RED-BREASTED NUTHATCHES were seen throughout this period in Waterford. A CANADA WARBLER was seen in the Connecticut Arboretum September 4. A TRAILL'S FLYCATCHER was found at Magonk Point in Waterford September 6. Other observations there include a BLACK-THROATED GREEN WARBLER September 8, a SHARP-SHINNED HAWK and a YELLOW-BELLIED SAPSUCKER September 23, two WHITE-THROATED SPARROWS and two PALM WARBLERS September 6-28, and a BROWN CREEPER September 29. Birding at Harkness Beach produced a PIGEON HAWK September 18 and an early PIED-BILLED GREBE September 24. An uncommon RED SQUIRREL was seen along TSC's Nature Trail in September. Many of the GYPSY MOTH egg masses apparently are being parasitized by a tiny parasitic wasp of the genus OOENCYRTUS. Eggs that have been parasitized have tiny pin holes in them. Some very early EVENING GROSBEAKS were observed in Norwich October 1. It will be interesting to watch for the return of the "Beaks" to this area.

Niantic, Old Lyme: Two SWAINSON'S THRUSHES were seen in Old Lyme September 9. Both of the early migratory teal were observed in Old Lyme, including 50 GREEN-WINGED TEAL and 200 BLUE-WINGED TEAL. An OSPREY was seen sitting on top of a TV antenna in Niantic September 16.

Groton, Mystic: SLATE-COLORED JUNCOES returned to the Peach Sanctuary in Mystic September 29. Other observations there include the return of the WHITE-THROATED SPARROWS October 1 and a BLACK-THROATED BLUE WARBLER and a GOLDEN-CROWNED KINGLET October 2. One of the latter was also seen at Avery Point in Groton on October 1.

Observers: G. Bissell, I. Goldman, F. Haeni, H. Kelsey.

BIRD BANDING NOTES

September 3 - October 3

The following birds were banded at the Peace Sanctuary in Mystic:

Catbird (1)
Black-capped Chickadee (7)
Blue Jay (26)
Slate-colored Junco (15)
White-breasted Nuthatch (1)
Tufted Titmouse (7)
Rufous-sided Towhee (1)
Nashville Warbler (1)

At the Thames Science Center in New London, these birds were banded:

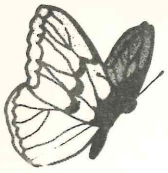
Black-capped Chickadee (3)
Song Sparrow (1)
Ovenbird (1)

A Slate-colored Junco that was banded at TSC on March 11, 1972, was recaptured in a mist net in Nashua, New Hampshire, April 7, 1972. This is the first recovery of a banded bird from TSC.

Another interesting band recovery was a Herring Gull that was banded August 5, 1972, at Sandy Point Island in Stonington. The bird was found with a broken wing on September 24, 1972, at the Groton Sanitary Landfill Area.

ADDENDA TO WEATHER FOLKLORE

Red sky at night—
Sailors' delight.
Red sky at morning—
Sailors take warning.



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Pewter
Gem Bracelets
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